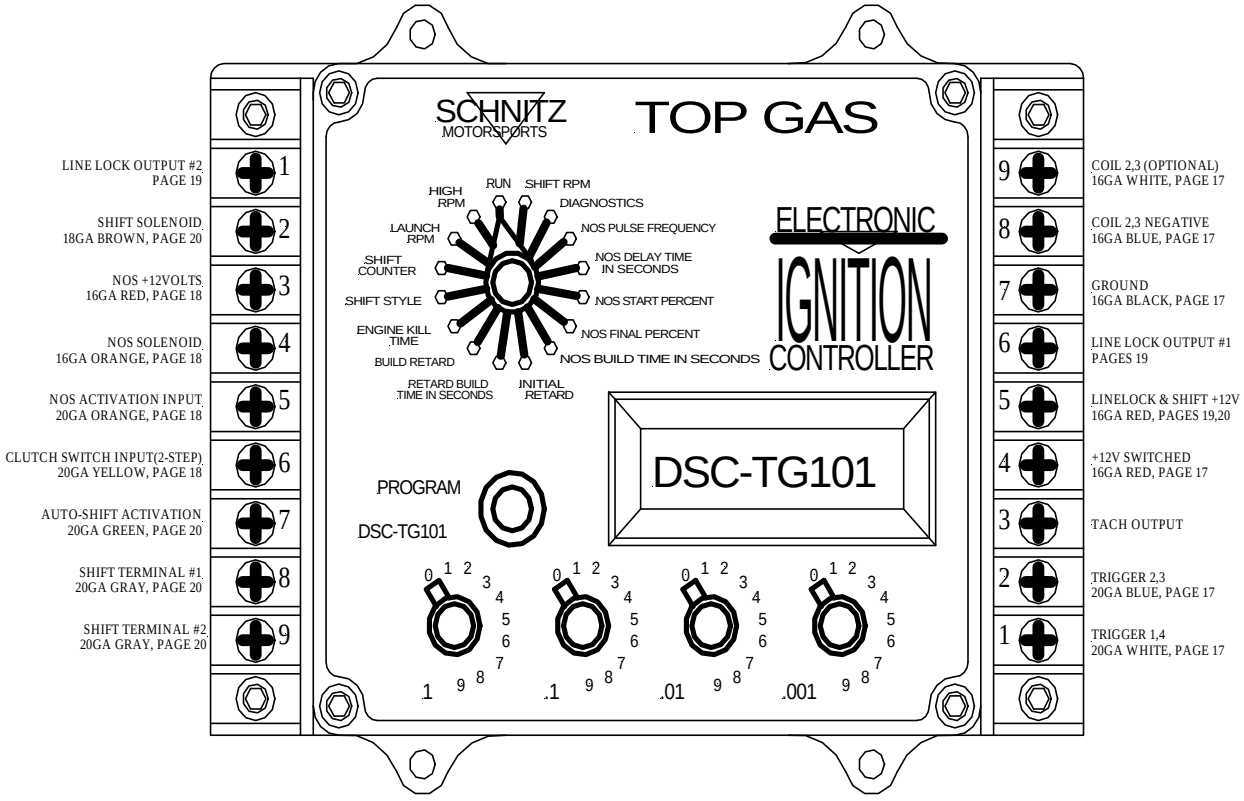
SCHNITZ MOTORSPORTS

DSC-TG101 "TOP-GAS" IGNITION CONTROLLER

USER MANUAL

AND

INSTALLATION GUIDE



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Important Application Information

IMPORTANT

Stock Crankshaft Trigger will NOT work with this Controller.
Use only DYNA (S) ® or DYNA PRO SERIES ® Trigger.
Use only a Dual Magnet Rotor for Crankshaft Trigger.
Use only .7ohm High Energy (Blue) Ignition Coils. Part #DC9-1, DC9-2
Use only Static Suppression Spark-plug Wires. Part #DW-800

All items listed above are available from Schnitz Racing. 1-219-728-9730

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It is the purchaser’s responsibility to check the state and local laws pertaining to the use of Nitrous Oxide for racing applications. Schnitz Motorsports does not recommend nor condone the use of its products for illegal street racing.

Caution

Follow all recommended safety guidelines from this and other manufacturer installation guidelines. Never install any device, which pulsates nitrous solenoids without a safety solenoid installed. Static suppression ignition wires must be used with this unit! Mount the Ignition Controller as far away from secondary ignition components (ignition coils, ignition wires, etc.) As is physically possible.

Installation of Schnitz Motorsports products signifies that you have read this document and agree to the terms stated within.

Top-Gas
Overview

Description:

The Top-Gas Ignition Controller is a highly integrated Digital Ignition System with innovative features that enable today's racing technology to be utilized to its maximum potential. The system was designed to be simple while maintaining focus on features. This design technique has led to a controller that can be installed in hours not days, provided other operational systems have already been installed or are existing on the motorcycle.

Features:

A - Ignition System

1 - The controller uses digital circuitry to precisely monitor and control the Inductive Type ignition drivers. This design enables precise and consistent ignition timing control from High Energy Ignition Coils. The High-Energy design ensures ignition performance for today's technology.

2 – Ignition Timing Control is integrated into the controller. There are two stages and types of timing retard available. The first stage or Initial Retard can range from 0 to 12 degrees. This stage is activated immediately when the Progressive Nitrous Timer System is activated. The second stage was designed with a progressive timer that applies timing control over a period of time. This stage is activated when the Nitrous Delay Timer times out. The second stage of retard can range from 0 to 22 degrees and the Progressive Retard Timer can be programmed from .200 to 9.000 seconds.

IMPORTANT – The first and second stages of retard are added together when used together. Example: 1st stage at 4 degrees and 2nd stage at 12 degrees would provide a total of 16 degrees of timing retard.

B – Features based on Engine RPM Control

1 – High RPM, This selection enables the user to program an Upper RPM Limit for the engine. Valid RPM Range is from 3,000 to 14,500 RPM in 100-RPM Increments.

2 – Launch RPM, This selection enables the user to program the RPM at which the engine and/or motorcycle leave starting line with. Applying +12V signal activates this stage of RPM control. Valid RPM Range is from 3,000 to 14,500 RPM in 100-RPM Increments.

3 – Shift RPM, This selection enables the user to program the RPM at which the Shift Light Output becomes active and/or Auto Shifting can occur. The Shift Light Output is ON any time engine RPM is above the Shift RPM Setting, and OFF whenever engine RPM falls below the Shift RPM. The Auto-Shift System is very flexible and can be configured for all popular transmission styles. There is a 1-second delay timer built in for the 1-2 shift, this helps to control short shifts due to wheel spin off the line. A built-in and adjustable shift counter keeps track of gear position and engine kill requirements. The shift counter also stops false shifting in top gear position. The shift system can programmed for automatic or manual shifting. The rider can do a manual or Shift Override at any time, even while in auto mode. The shift counter is updated internally when manual shifts occur also.

C – Integrated Progressive Nitrous System and Programmable Digital Timer System

1 – The Progressive Nitrous System enables the user to adjust the NOS power curve for track and / or performance conditions.

A – NOS Delay Timer, This selection enables the user to program a delay for the Start of NOS. The delay time can be set from 0.000 to 9.999 seconds. This delay Timer also determines when the 2nd stage of ignition timing retard begins.

B – NOS Starting Percent, This selection determines the amount of NOS that is delivered to the engine at the start of Nitrous Injection. By lowering the amount of Nitrous introduced into the engine initially, traction problems can be controlled to match track conditions. Range is from 0% (OFF), 20% to 100% in 1% increments.

C – NOS Final Percent, This selection determines the final amount of Nitrous that will be delivered to the engine. Range is from 0%(OFF), 20% to 100% in 1% increments.

D – NOS Build Time, This selection allows the user to adjust the amount of time it takes the Nitrous to go from Start Power to Final Power. A short time setting will make the Nitrous Power Curve very aggressive. And a longer setting would make the power curve less aggressive. Power Build Time ranges from .200 to 9.900 seconds.

D – Diagnostics and Battery Voltage Monitor

1 – The Diagnostics Menu allows the user to perform various tests on activation circuits and ignition coil output. The Static or Base ignition timing must be set using Diagnostic Mode. When the engine is running the Diagnostic selection automatically becomes a Digital Tachometer. This can be used to check Actual Launch RPM and adjust the settings as needed.

2 – The Battery Voltage can be displayed when desired by the user. The voltage is +/- .1 volt accuracy. The voltage output can be re-calibrated if needed.

Schnitz Motorsports

DSC-TG101, TOP GAS Ignition Controller

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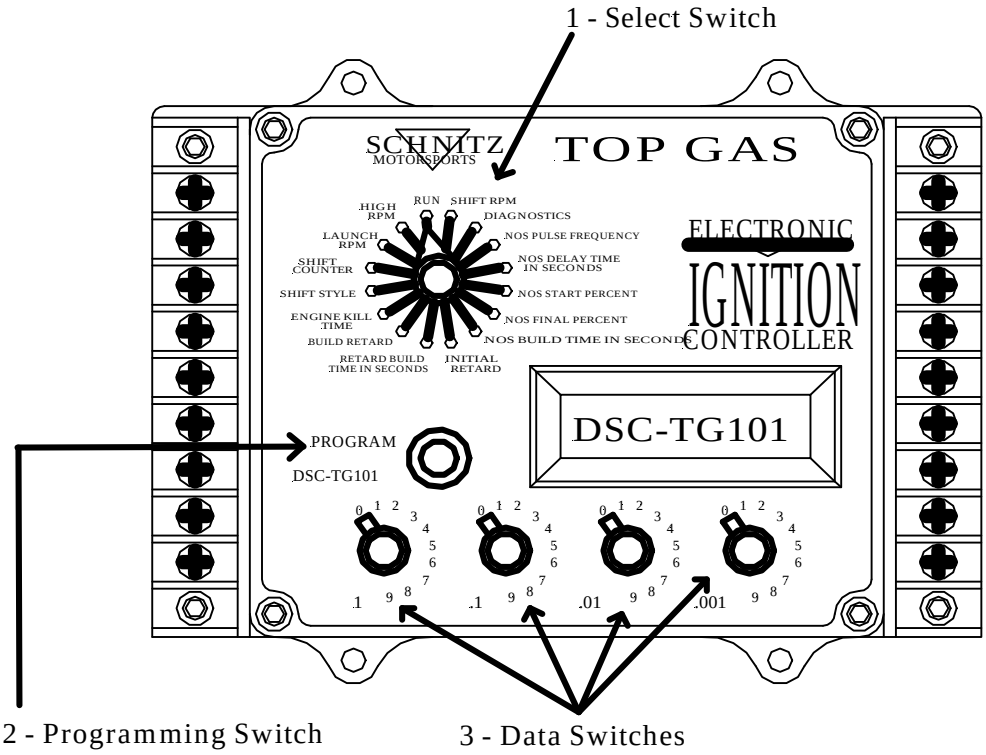
1.0 - The Basics of Setting Controller Parameters



Switch Descriptions and Functions

1 - Switch #1 is the FUNCTION SELECT SWITCH, This switch is used to select which parameter is displayed and also selects that parameter for programming.

2 - Switch #2 is the PROGRAM SWITCH, When this switch is pressed down and held for 2-seconds the DATA switches will be read and the settings will be programmed into the controller. If an INVALID setting is read the controller will NOT save the setting and will display an INVALID message on the display.

3 - Data Switches #3 are for entering RPM Data, Ignition Retard Data, NOS Control Data, and for selecting various options as described in the following pages.

Example Programming Sequence

Function Select Switch(#1) set to HIGH RPM (Switch pointing to HIGH RPM)

Data Switch 1 set at 1, .01 at 2, .001 at 5, .001 at 0

Data Switch 1 x 10,000 RPM
Data Switch .1 x 1,000 RPM
Data Switch .01 x 100 RPM
Data Switch .001 is Ignored

Pressing and holding PROGRAM Switch for 2-seconds will set the HIGH RPM at 12,500 RPM.

Please refer to each of the following sections for setting all Functions.

1.1– Setting HIGH RPM, Upper RPM Limit

Set SELECT Switch to HIGH RPM.

Example that would set HIGH RPM at 10,400

1 set at	1
.1 set at	0
.01 set at	4
.001 set at	0

Press PROGRAM Button until the display reads PROGRAM. Release the button and the display will now read 10,400. HIGH RPM is now set at 10,400 RPM.

Valid RPM range 2,000 to 14,500 RPM in 100-RPM Increments.
Setting HIGH RPM to 0 will turn this function off.

1.2- Setting LAUNCH RPM

Set SELECT Switch to LAUNCH RPM.

Example that would set LAUNCH RPM at 7,200

1 set at	0
.1 set at	7
.01 set at	2
.001 set at	0

Press PROGRAM Button until the display reads PROGRAM. Release the button and the display will now read 7,200. LAUNCH RPM is now set at 7,200 RPM.

Valid RPM range 2,000 to 14,500 RPM in 100-RPM Increments.
Setting LAUNCH RPM to 0 will turn this function off.

1.3 - Setting SHIFT RPM

Set SELECT Switch to SHIFT LIGHT RPM.

Example that would set SHIFT LIGHT RPM at 9,800

1 set at	0
.1 set at	9
.01 set at	8
.001 set at	0

Press PROGRAM Button until the display reads PROGRAM. Release the button and the display will now read 9,800. SHIFT LIGHT RPM is now set at 9,800 RPM.

Valid RPM range 2,000 to 14,500 RPM in 100-RPM Increments.
Setting SHIFT LIGHT RPM to 0 will turn this function off.

1.4 – Setting SHIFT STYLE

The Auto-Shift is NOT activated until the Auto Shift Activation terminal is armed. Applying +12 volts to the terminal does this. At this time of activation a 1-second timer will begin, NO AUTO SHIFTS will occur until this 1-second timer is done. This prevents sudden shifts due to wheel spin at the initial launch. A shift override may be activated at any time by connecting SHIFT TERMINAL #1 and SHIFT TERMINAL #2. This is done with a shift button. A shift override will be counted by the AUTO-SHIFT shift counter. Ignition KILL for the shifts are controlled automatically by the controller. To use the SHIFT COUNTER with Manual shifting set the SHIFT STYLE as outline below. AUTO SHIFT Activation must be ON for SHIFT COUNTER to work even when using MANUAL SHIFT Modes.

NOTE: For Manual Shifting with SHIFT COUNTER please refer to the wiring section for correct installation procedures.

WARNING: The AUTO SHIFT function only turns the Shift Output on momentarily, if using MANUAL SHIFT MODE the correct SHIFT STYLE must be chosen or the Shift Light will only flash momentarily. Also please note that the Manual Shift Modes can NOT be used for AUTO SHIFTING.

SHIFT STYLE options are as follows:

LITE	No AUTO SHIFTING. Engine kill for all shifts. Manual Shift Only.
1-2 LITE	NO AUTO SHIFTING. Will NOT kill ignition for 1-2 shift.
1-2-3 LITE	NO AUTO SHIFTING. Will NOT kill ignition for 1-2-3 shifts.
AUTOLITE	NO AUTO SHIFTING. Will NOT kill ignition for all shifts.
STANDARD	AUTO SHIFT ON. Will kill for all gears.
1-2 AUTO	AUTO SHIFT ON. Will NOT kill ignition for 1-2 shift.
1-2-3 AUTO	AUTO SHIFT ON. Will NOT kill ignition for 1-2-3 shifts.
FUL AUTO	AUTO SHIFT ON. Will NOT kill ignition for all shifts.

To change the SHIFT STYLE setting set the SELECT Switch to SHIFT STYLE. Pressing the PROGRAM button at this time will select the next option available. All option may be viewed by pressing the PROGRAM button repeatedly.

NOTE: If an AUTO SHIFT STLYE is selected other than STANDARD the SHIFT COUNTER will be automatically turned on. The SHIFT COUNTER may be set to any Option except OFF in AUTO Modes.

1.5 – Setting SHIFT COUNTER

SHIFT COUNTER options are as follows:

OFF	Shift counter is off
2-SPEED	No Auto-Shifts after 1 to 2 shift.
3-SPEED	No Auto-Shifts after 2 to 3 shift.
4-SPEED	No Auto-Shifts after 3 to 4 shift.
5-SPEED	No Auto-Shifts after 4 to 5 shift.
6-SPEED	No Auto-Shifts after 5 to 6 shift.

To change the SHIFT COUNTER setting set the SELECT Switch to SHIFT STYLE & SHIFT COUNTER. Set the .001 DATA switch to 1. Pressing the PROGRAM button at this time will select the next option available. All options may be viewed by pressing the PROGRAM button repeatedly.

1.6 – Setting ENGINE KILL TIME

Set SELECT Switch to ENGINE KILL TIME

Example that would set ENGINE KILL TIME at 85 milliseconds

1 set at	0
.1 set at	0
.01 set at	8
.001 set at	5

Press the PROGRAM button until the display reads PROGRAM. Display will now read .085 and ENGINE KILL TIME is set at 85 milliseconds. Valid Time range .020 to .150 second in .001 increments.

1.7 – Setting Ignition Timing INITIAL RETARD, 1st Stage of Retard

Set SELECT Switch to INITIAL RETARD

Example that would set INITIAL RETARD to 6 degrees

1 set at	0 (not used)
.1 set at	0 (not used)
.01 set at	0
.001 set at	6

Press PROGRAM button until the display reads PROGRAM. Display will now read 6 DEG and INITIAL RETARD is set to 6 degrees. Valid range 1 to 12 Degrees, 1Degree Increments. Setting to 0 will turn this function OFF. NOTE: This retard stage will turn on immediately when the NOS Activation is turned on. (+12volts applied). The ignition retard will remain active until the NOS system resets.

1.8 – Setting Ignition Timing BUILD RETARD, 2nd Stage of Retard

Set SELECT Switch to BUILD RETARD

Example that would set BUILD RETARD to 14 degrees

1 set at	0 (not used)
.1 set at	0 (not used)
.01 set at	1
.001 set at	4

Press PROGRAM button until the display reads PROGRAM. Display will now read 14 DEG and BUILD RETARD is set to 14 degrees. Valid range 1 to 22 Degrees, 1 Degree Increments. Setting to 0 will turn this function OFF.

NOTE: This retard stage will turn on when the NOS Delay Timer has timed out and the NOS Solenoids have been turned on. The retard will progressively come on based on the RETARD BUILD TIME setting.

1.9 – Setting RETARD BUILD TIME for 2nd Stage of Retard

Set SELECT Switch to RETARD BUILD TIME IN SECONDS

Example that would set RETARD BUILD TIME at 2.400 seconds

1 set at	2
.1 set at	4
.01 set at	0 (not used)
.001 set at	0 (not used)

Press PROGRAM button until the display reads PROGRAM. Display will now read 2.400 and RETARD BUILD TIME is set at 2.400 seconds. Valid Time Range .200 to 9.900 seconds, .1 second Increments.

Note: This setting determines the Ramp of IGNITION TIMING RETARD. A low setting i.e. (.200) will make the TIMING RETARD very aggressive.
A high setting i.e. (9.900) will make the TIMING RETARD gradual.

1.10 – Setting NOS DELAY TIMER

Set SELECT Switch to NOS DELAY TIME IN SECONDS

Example that would set NOS DELAY TIME at 1.250 seconds

1 set at	1
.1 set at	2
.01 set at	5
.001 set at	0

Press PROGRAM button until the display reads PROGRAM. Display will now read 1.250 and NOS DELAY TIME is set to 1.250 seconds.

Valid range 0.000 to 9.999 seconds in .001 second increments.

Note: This is timer to delay the start of NOS. A time of 0.000 will allow the NOS to start immediately when activated.

1.13– Setting the NOS START PERCENT

Set SELECT Switch to NOS START PERCENT

Example that would set NOS START PERCENT at 34%

1 set at	0 (not used)
.1 set at	0
.01 set at	3
.001 set at	4

Press PROGRAM button until the display reads PROGRAM. Display will now read 34% and NOS START PERCENT is set at 34%. Valid Percentage Range 20 to 100% in 1% increments. Setting START or FINAL Percent to 0% will turn NOS OFF.
Note: This setting allows the starting POWER developed from the NOS to be controlled for traction and other reasons.

1.14– Setting NOS FINAL PERCENT

Set SELECT Switch to NOS FINAL PERCENT

Example that would set NOS FINAL PERCENT at 100%

1 set at	0 (not used)
.1 set at	1
.01 set at	0
.001 set at	0

Press PROGRAM button until the display reads PROGRAM. Display will now read 100% and NOS FINAL PERCENT is set at 100%. Valid Percentage Range 20 to 100%, 1% Increments. Setting START or FINAL Percent to 0% will turn NOS OFF.

Note: This setting controls the maximum percentage of Nitrous Oxide that will be delivered to the engine. A setting of less than 100% can be used. However, if FINAL% is less than START% the NOS will remain at START% for the entire NOS cycle.

1.15– Setting NOS BUILD TIME

Set SELECT Switch to NOS BUILD TIME IN SECONDS

Example that would set NOS BUILD TIME at 3.500 seconds

1 set at	3
.1 set at	5
.01 set at	0 (not used)
.001 set at	0 (not used)

Press PROGRAM button until the display reads PROGRAM. Display will now read 3.500 and NOS BUILD TIME is set at 3.500 seconds. Valid Time Range .200 to 9.900 seconds in .1 second Increments.

Note: This setting determines how fast the NOS goes from START PERCENT to FINAL PERCENT. A shorter BUILD TIME will make the NOS Power Curve more Aggressive.

1.16– Checking Battery Voltage

Set SELECT Switch to VOLTS

Battery Voltage will now be displayed. It is normal for the battery voltage reading to vary with the engine running. This is due to the short duration high current demands of the ignition coils.

Section 2, Diagnostics

2.0 – Description of Diagnostic Functions

The Diagnostics Functions will allow the user to test the output of the ignition coils, static time the ignition system, and test the activation inputs. These functions are only available if NO crankshaft movement has occurred. If the engine is running or has been turned over the diagnostics functions cannot be accessed. When the engine is running this selection automatically displays engine RPM on the display.

2.1 – Ignition Coil Output Test

Set the SELECT Switch to DIAGNOSTICS

Press and HOLD the PROGRAM Switch until display reads RELEASE. Release the PROGRAM Switch at this time. The controller is now in the diagnostic mode.

To perform an ignition coil output test set the .001 switch to 0.
Press and release the PROGRAM switch. Each coil will be fired one time.

Caution: The ignition coils will produce a high voltage spark. Use appropriate methods for testing.

To exit diagnostics turn the .001 switch to 7. Then press and release the PROGRAM switch.

2.2 – Setting Ignition Static Timing

Set the SELECT Switch to DIAGNOSTICS

Press and HOLD the PROGRAM Switch until display reads RELEASE. Release the PROGRAM Switch at this time. The controller is now in the diagnostic mode.

To set the Static Timing set the .001 switch to 1.
The display will read one of the following messages.

STATIC - This shows the controller is in Static Timing Mode
FIRE 1,4 - This shows when 1,4 cylinder will fire.
FIRE 2,3 - This shows when 2,3 cylinder will fire.

Note: Never Static Time the engine from the first trigger magnet. Only use the second magnet 90 degrees past the first magnet. Rotate the engine in the same direction as when running. The firing point for the spark is at the point where the display changes to the message FIRE *, *.

To exit diagnostics turn the .001 switch to 7. Then press and release the PROGRAM switch.

IMPORTANT: This is the BASE TIMING for the ignition. If you do NOT understand this setting, then contact YOUR engine builder for help.

2.3 - STATIC TIMING SHEET - SCHNITZ IGNITIONS

*** IMPORTANT INFORMATION ***

SETTING IGNITION STATIC TIMING

1 - INSTALL A DEGREE WHEEL AND LOCATE TOP DEAD CENTER AS OUTLINED WITH THE DEGREE WHEEL INSTRUCTIONS.

IF YOU DO NOT HAVE A DEGREE WHEEL SCHNITZ RACING CARRIES THIS ITEM.

THIS IS THE MOST ACCURATE WAY TO SET THE IGNITION TIMING. IF YOU DO NOT KNOW THE IGNITION TIMING SPECIFICATIONS FOR YOUR ENGINE, CONTACT YOUR ENGINE BUILDER FOR ASSISTANCE.

2 - ENTER DIAGNOSTIC MODE AS OUTLINED IN THE INSTRUCTION MANUAL. SET THE .001 DATA SWITCH TO 1, THIS IS THE STATIC TIMING MODE.
IMPORTANT: NEVER SET IGNITION TIMING BY ANY OTHER METHOD THAN THAT WHICH IS OUTLINED BY THIS INSTRUCTION SHEET.

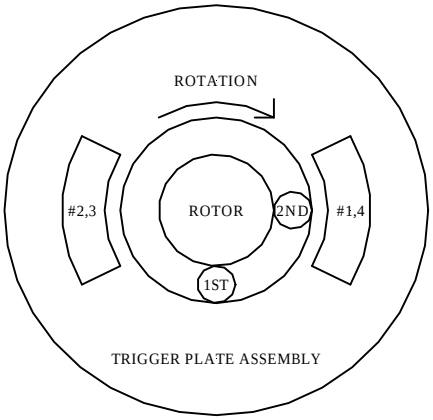
3 - AT THIS TIME THE DISPLAY SHOULD READ ONE OF THE FOLLOWING.

STATIC - INDICATING STATIC TIMING MODE.
FIRE 1,4 - THIS INDICATES #1,4 TRIGGER IS ACTIVE.
FIRE 2,3 - THIS INDICATES #2,3 TRIGGER IS ACTIVE.

TURN THE ENGINE THE DIRECTION OF NORMAL ROTATION.
NOTE: THERE ARE 2 MAGNETS ON THE TRIGGER ROTOR. THE DISPLAY WILL INDICATE WHEN BOTH OF THESE MAGNETS ARE ALIGNED WITH THE TRIGGER. YOU MUST USE THE SECOND MAGNET, THE SECOND MAGNET IS THE ONE THAT FIRES THE IGNITION COIL.

PLEASE NOTE THAT THE DISPLAY WILL INDICATE THE PRECISE TIME WHEN THE TRIGGER IS ACTIVATED BY THE ROTOR MAGNET. ADJUST THE TRIGGER PLATE OR TRIGGER ASSEMBLY TO OBTAIN THE CORRECT IGNITION TIMING.

EXAMPLE SHOWING 1ST AND 2ND TIMING MAGNETS
AT THIS TIME THE DISPLAY WOULD READ: FIRE 1,4



2.4 – Testing NOS Activation Input

Set the SELECT Switch to DIAGNOSTICS

Press and HOLD the PROGRAM Switch until display reads RELEASE. Release the PROGRAM Switch at this time. The controller is now in the diagnostic mode.

To perform NOS Activation Input test set the .001 switch to 3.

At this time the DISPLAY will read NOS. If +12 volts is connected to the NOS Activation terminal the Display will flash the message ACTIVE. Use this test to verify NOS arming / activation switches on the bike.

To exit diagnostics turn the .001 switch to 7. Then press and release the PROGRAM switch.

2.5 – Testing the Clutch Switch Input

Set the SELECT Switch to DIAGNOSTICS

Press and HOLD the PROGRAM Switch until display reads RELEASE. Release the PROGRAM Switch at this time. The controller is now in the diagnostic mode.

To perform CLUTCH (2-step) Input test set the .001 switch to 2.

At this time the DISPLAY will read CLUTCH. If +12 volts is connected to the CLUTCH input terminal the Display would flash the message ACTIVE. Use this test to verify clutch / 2-step switches on the bike.

To exit diagnostics turn the .001 switch to 7. Then press and release the PROGRAM switch.

2.6 – Testing Auto Shift Activation Input

Set the SELECT Switch to DIAGNOSTICS

Press and HOLD the PROGRAM Switch until display reads RELEASE. Release the PROGRAM Switch at this time. The controller is now in the diagnostic mode.

To perform AUTO SHIFT ACTIVATION Input test set the .001 switch to 4.

At this time the DISPLAY will read AUTO. If +12 volts is connected to the Auto Activation terminal the Display will flash the message ACTIVE. Use this test to verify the Auto Shift activation switch.

To exit diagnostics turn the .001 switch to 7. Then press and release the PROGRAM switch.

2.7 – Testing Shift Override Input

Set the SELECT Switch to DIAGNOSTICS

Press and HOLD the PROGRAM Switch until display reads RELEASE. Release the PROGRAM Switch at this time. The controller is now in the diagnostic mode.

To perform Manual Shift Input test set the .001 switch to 5.

At this time the DISPLAY will read SHIFT. If +12 volts is connected to the SHIFT TERMINAL #1 or SHIFT TERMINAL #1 and SHIFT TERMINAL #2 are connected the Display will flash the message ACTIVE.

Use this test to verify the Manual Shift activation switch.

To exit diagnostics turn the .001 switch to 7. Then press and release the PROGRAM switch.

Section 3, Wiring Diagrams and Installation Instructions

3.0 – Overview of Installation Instructions

Please read and follow all instructions carefully. It is important that the installation guidelines be followed for maximum performance.

Guidelines:

1 - If Stock Ignition Switch is used a SEPARATE POWER SOURCE for the NOS System is HIGHLY recommended. Please refer to page 17.
2 - Use a good quality wire of recommended size.
3 - Solder all connectors to the wire, crimped connectors fail!
4 - Use shrink wrap to protect exposed terminals / wires.
5 - Install the proper FUSE where required.
6 - Use only the recommended ignition components.
7 - Use quality switches.
8 - Follow other manufacturer guidelines and recommendations when installing related components.
9 - NEVER disregard SAFETY and / or CAUTION Warnings!
10 - Mount all components correctly.

Related Components Needed for Installation and Operation

1 - Ignition Coils, DYNA (r) .7 ohm blue coils.
2 - Static Suppression Ignition Wires ONLY!
3 - Crankshaft Trigger, DYNA (s) or PRO SERIES (r)
(DUAL magnet rotor ONLY!)
4 - Nitrous System, Recommended NOS Kit (optional).
(Use genuine NOS components for best results)
5 – Throttle with Switch built in. Activation switches as needed.
6 - Electric over air shift components (optional).

Components listed as optional may be used or NOT used, this is at the users / installers desecration.

3.1 - NOISE SUPPRESSION DIODE INSTALLATION FOR ELECTRIC OVER AIR SHIFT SOLENOIDS

Installation Instructions for SCHNITZ IGNITION CONTROLLERS with AUTO-SHIFT.

1 - PRO-STREET, Connect this way ONLY if the Shift Light Output is being used for Auto-Shifting.
   a - Red Wire to LEFT #1 Terminal, Shift Light Positive
   b - Black Wire to Left #2 Terminal, Shift Light Ground
2 - TOP-GAS
   a - Red Wire to LEFT #2 Terminal, Shift Output
   b - Black Wire to RIGHT #7 Terminal, Ground
3 - TOP-GAS "4"
   a - Red Wire to RIGHT #4 Terminal, Switched +12 Volts
   b - Black Wire to LEFT #4 Terminal, Shift Solenoid Ground

Installation Instructions for All SCHNITZ AUTO-SHIFTER's

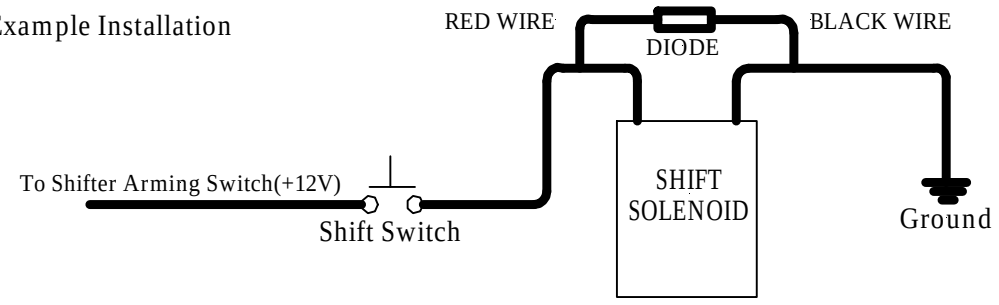
1 - Connect the Noise Suppression Diode RED WIRE to the AUTO-SHIFT Red Wire that is going to the Shift Solenoid.
2 - Connect the Noise Suppression Diode BLACK WIRE to the AUTO-SHIFT Blue Wire.

Installation Instructions for all MANUAL SHIFT Electric Over Air Shifter, PRO-MOD & FUNNY-BIKE

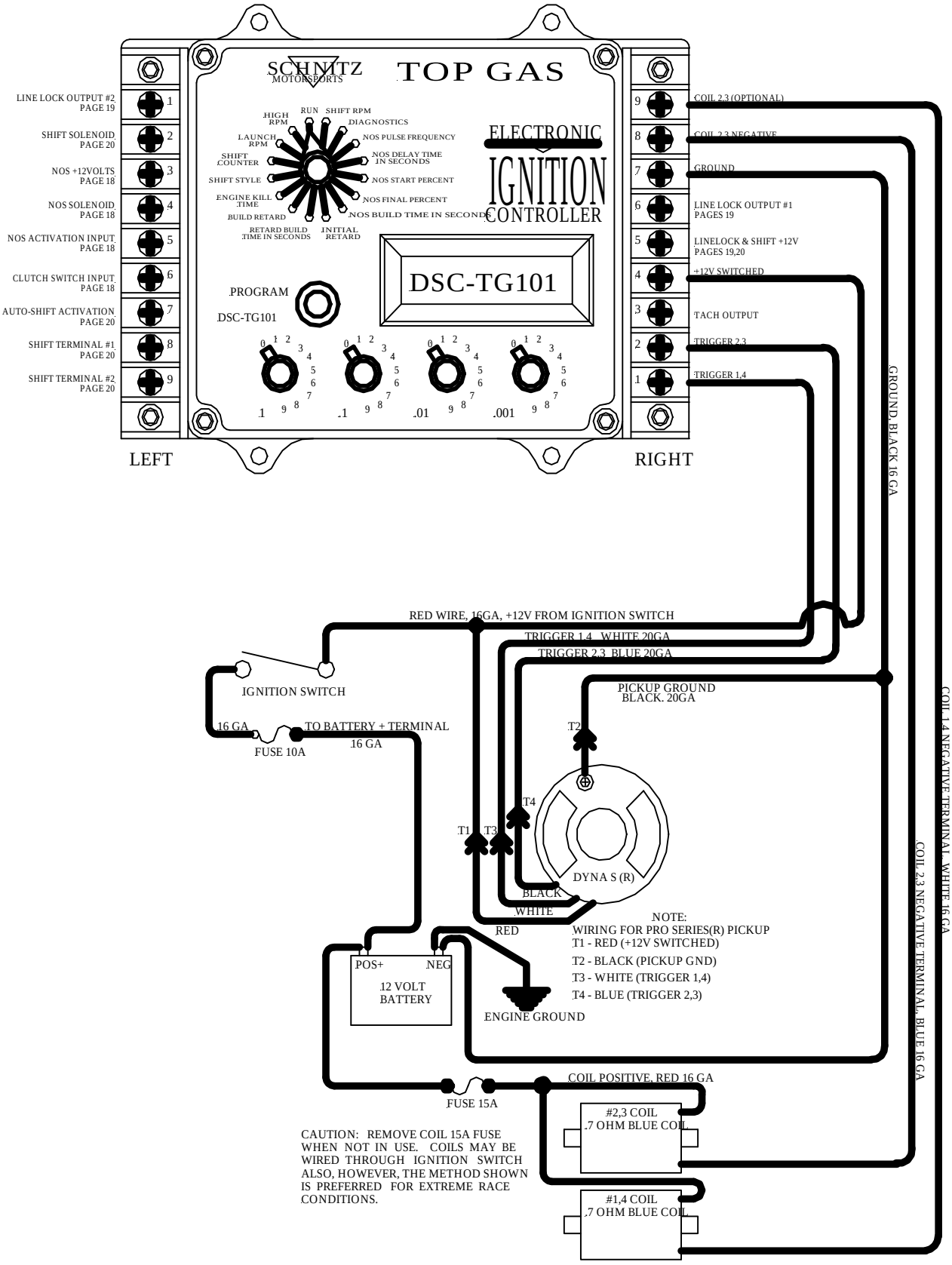
1 - Red Wire to Positive(+!2V side) Shift Solenoid Wire.
2 - Black Wire to Shift Solenoid Ground Wire.

The Noise Suppression Diode should be placed within 6 inches of the Shift Solenoid. The recommended method for connecting the Diode is as follows.
1 - Strip the Insulation off from the Shift Solenoid wires approx. 6 inches back.
2 - Remove the Spade Terminals from the Diode Wires and remove approx. 1/2 inche of insulation.
3 - Wrap the Diode RED WIRE around the Shift Solenoid Positive Wire.
4 - Wrap the Diode BLACK WIRE around the Shift Solenoid Ground Wire.
5 - SOLDER these Connections, These connections will fail if they are NOT soldered.
6 - Cover the connections with Shrink Wrap or Electrical Tape.
7 - Test Shift Solenoid Operation. If the Solenoid will Operate the DIODE is most likely installed backwards e.g.(Red and Black wires reversed).

Example Installation



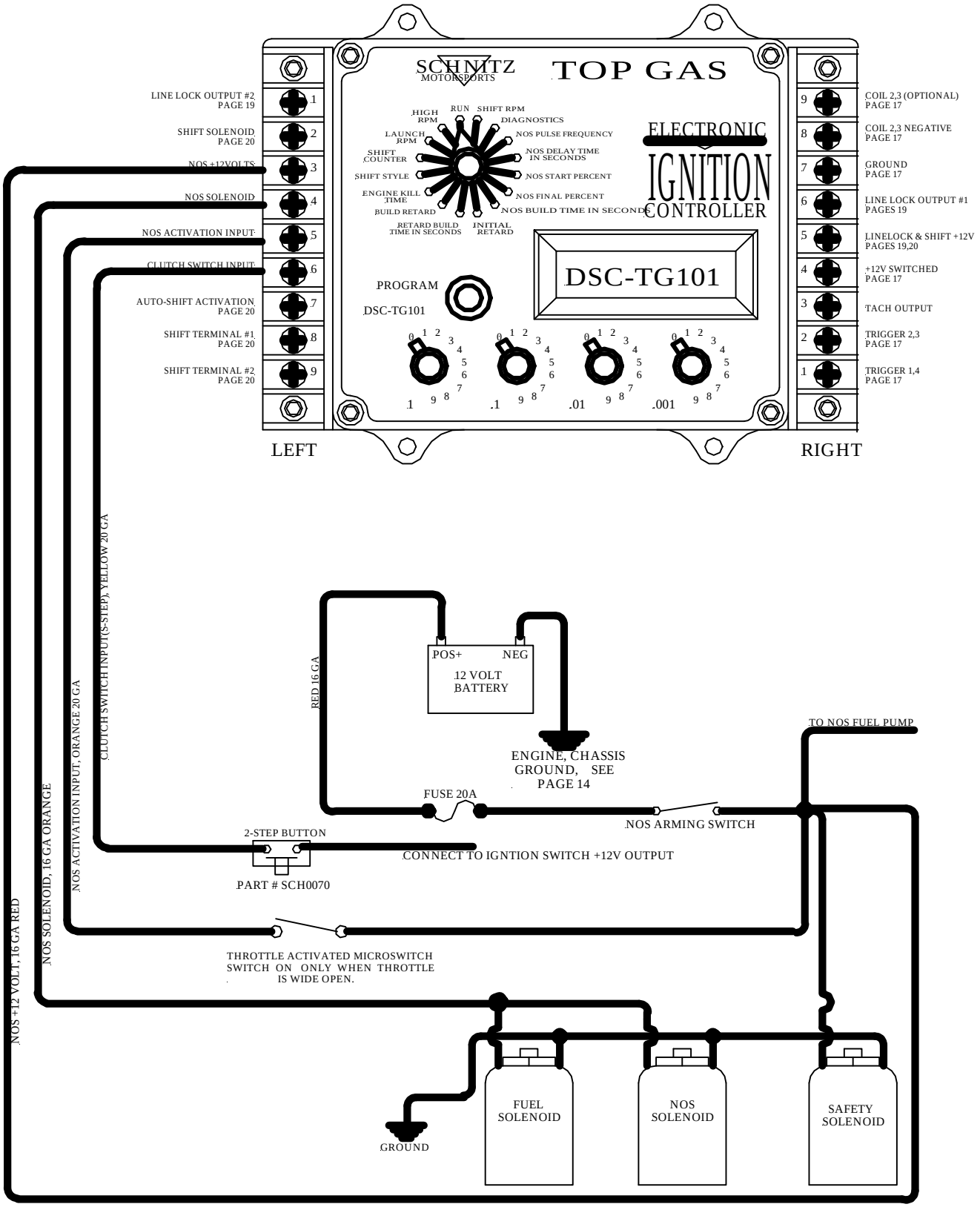
3.2 - Connecting the Ignition Components



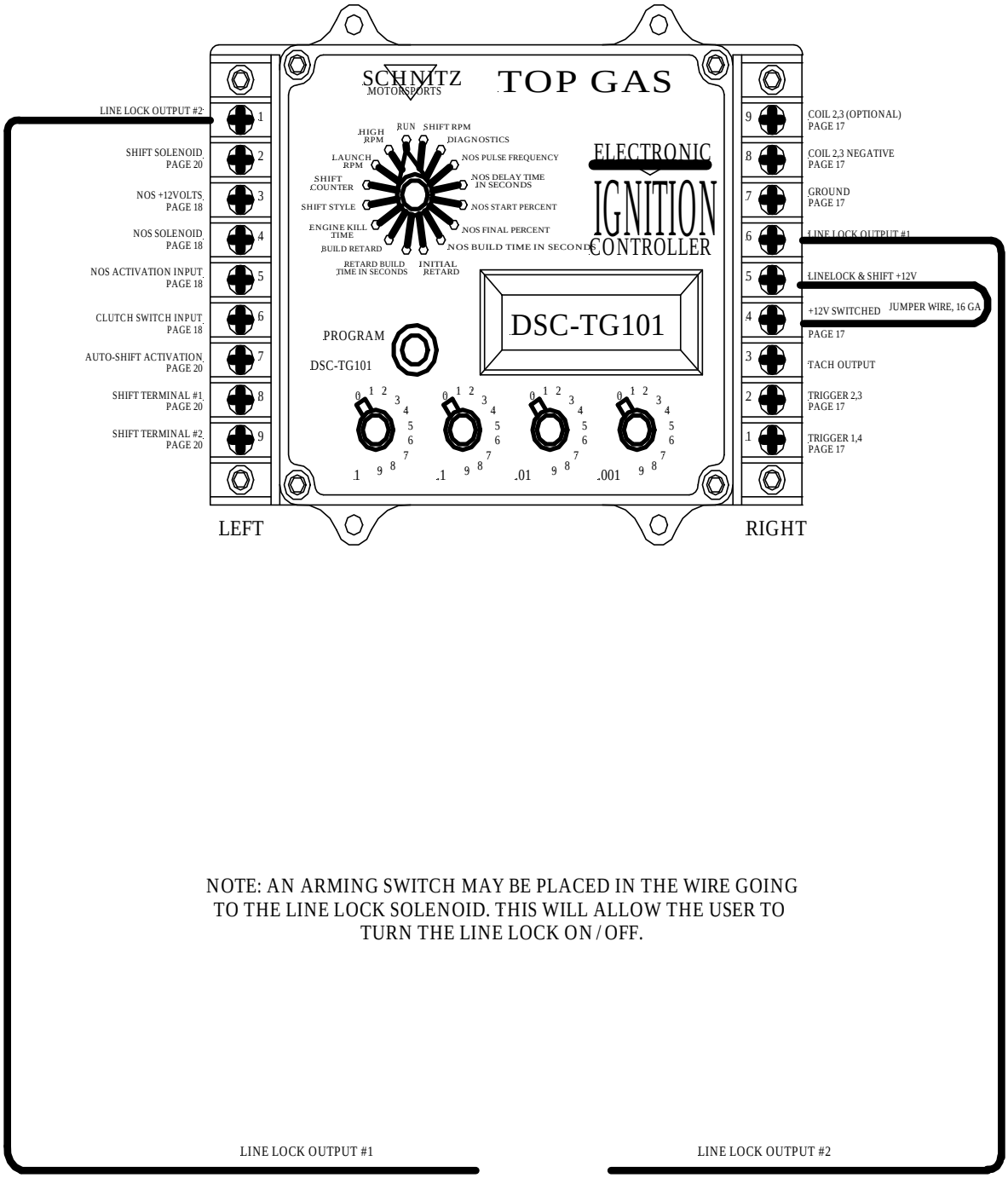
3.3 - Connecting the Nitrous Oxide System

NOTICE: ALL DIODES, CAPACITORS, AND FILTERS FROM PREVIOUS NOS INSTALLATIONS MUST BE REMOVED! FAILURE TO DO SO WILL RESULT IN UNDISIRABLE OPERATION OF THIS CONTROLLER.

NOTE: NOS TIMERS WILL NOT BEGIN UNTIL 2-STEP IS OFF.THIS ALLOWS THE SYSTEM TO OPERATE WITHOUT RELAYS. IF +12 VOLTS IS APLLIED TO NOS ACTIVATE WITHOUT THE CLUTCH INPUT ACTIVATED THE NOS WILL TURN ON.



3.4 - Connecting to the LINE LOCK Outputs

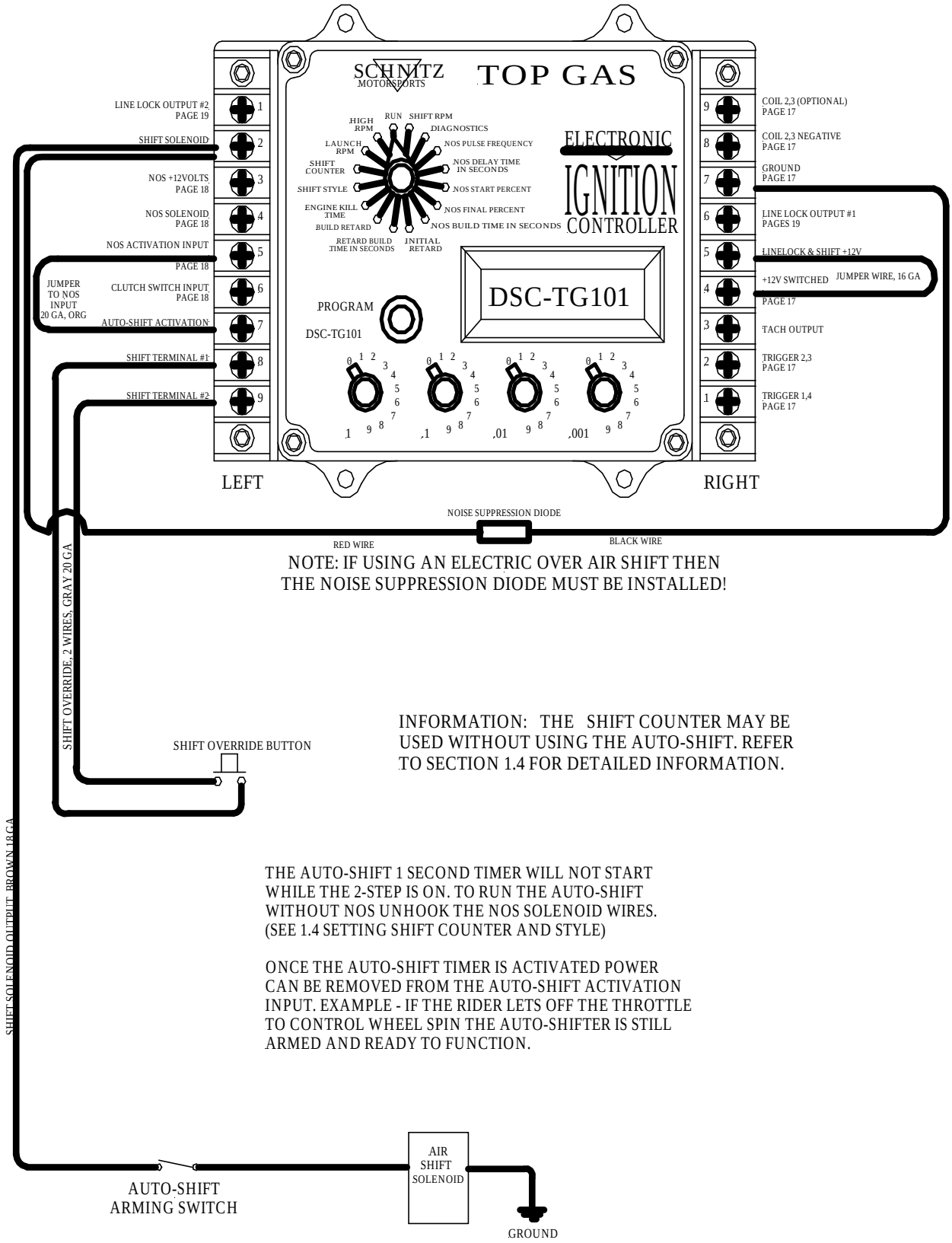


NOTE: AN ARMING SWITCH MAY BE PLACED IN THE WIRE GOING TO THE LINE LOCK SOLENOID. THIS WILL ALLOW THE USER TO TURN THE LINE LOCK ON / OFF.

BOTH LINE LOCK OUTPUTS PROVIDE +12 VOLTS ANY TIME THE CLUTCH INPUT(2-STEP) IS ACTIVATED. WHEN THE CLUTCH INPUT (2-STEP) IS RELEASED THE LINE LOCK OUTPUTS WILL TURN OFF.

THESE OUTPUTS ARE DESIGNED TO CONTROL A HYDRAULIC SOLENOID TO KEEP BRAKE FLUID PRESSURE APLLIED UNTIL THE 2-STEP IS RELEASED. THUS ELIMINATING ROLL OUT OF THE STARTING BEAM.

3.5 - Connecting to the AUTO-SHIFT output, inputs



NOTE: IF USING AN ELECTRIC OVER AIR SHIFT THEN THE NOISE SUPPRESSION DIODE MUST BE INSTALLED!

INFORMATION: THE SHIFT COUNTER MAY BE USED WITHOUT USING THE AUTO-SHIFT. REFER TO SECTION 1.4 FOR DETAILED INFORMATION.

THE AUTO-SHIFT 1 SECOND TIMER WILL NOT START WHILE THE 2-STEP IS ON. TO RUN THE AUTO-SHIFT WITHOUT NOS UNHOOK THE NOS SOLENOID WIRES. (SEE 1.4 SETTING SHIFT COUNTER AND STYLE)

ONCE THE AUTO-SHIFT TIMER IS ACTIVATED POWER CAN BE REMOVED FROM THE AUTO-SHIFT ACTIVATION INPUT. EXAMPLE - IF THE RIDER LETS OFF THE THROTTLE TO CONTROL WHEEL SPIN THE AUTO-SHIFTER IS STILL ARMED AND READY TO FUNCTION.

Warranty Information

4.0 – Warranty

Schnitz Motorsports warrants to the original purchaser that the Electronic Ignition Controller shall be free from defects in parts and workmanship under normal use for 90 days from the date of purchase.

Schnitz Motorsports obligation under this warranty is limited to the repair or replacement of any component found to be defective when returned postpaid to Schnitz Motorsports. The Controller must be returned with evidence of place and date of purchase or warranty will be void. The warranty will not apply if the Electronic Ignition Controller has been installed incorrectly, repaired, damaged, or tampered with by misuse, negligence or accident.

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Tech Tips

5.0 - How to Run without NOS and / or AUTO-SHIFT

1 - To disable the NOS system. Program either the Start or Final NOS Percent to 0. The Display will then read OFF when set to Start %or End %. Be SURE to turn OFF the Ignition Retard also. This is done by Setting the Initial and Build Retard Degree's to 0. By setting the NOS and Retard to OFF the user can still activate the Auto-Shift System and operate with no NOS.

2 - NOTE: When using Manual Shift Mode the Auto-Shift Activation must be enabled for the Engine Kill and Shift Counter to operate correctly. Please refer to the Section about setting the Auto-Shift for more information.

5.1 - Testing the Auto-Shift System

1 - The Auto-Shift System can be Tested with the Motorcycle Stationary. Remove the Shift Cylinder Linkage from the Shift Shaft. You MUST DO THIS! Verify that there is Air Pressure in the System. Raise the Back Tire off from the ground and support the motorcycle in a safe manner.

2 - Verify that the Desired Shift Style is selected. To help detect engine kill set the Kill Time to .150 Second. Set the Shift RPM to a low Setting i.e.(5,000 RPM). Prepare the Motorcycle for Starting. Make sure Fuel and Oil are OK, Have the Starter Handy. Turn on the Controller and all other Arming Switches needed for Auto-Shift Activation. At this time Twist the Throttle wide open to Arm the Auto-Shift System. If your bike does not use a Throttle switch then use the correct Arming Switch for your application. Be sure to release the throttle and Start the Engine. At this time you can give the throttle a quick twist and verify that the Shift Light and Shift Cylinder work for each gear change. You should be able to hear the Engine Kill when it is needed for the gear change. This is based on the Shift Style Setting. The Controller will RESET the Auto-Shift System after 20 seconds. This is why you must be prepared to run this test.

3 - After testing the System re-connect the Shift Cylinder Linkage, Set the Proper Shift RPM , and Engine Kill Time.